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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/691,761

10/23/2003

Jeffrey A. Nielsen

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EXAMINER

TENTONI, LEO B

ART UNIT

PAPER NUMBER

1732

MAIL DATE

DELIVERY MODE

08/14/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	Application No. 10/691,761	Applicant(s) NIELSEN ET AL.	
	Examiner Leo B. Tentoni	Art Unit 1732	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 20 June 2007.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-9 and 17 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9 and 17 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

**DETAILED ACTION**

***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 20 June 2007 has been entered.

***Specification***

2. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: METHODS FOR REDUCING WASTE IN SOLID FREEFORM FABRICATION.

***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

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4. Claims 1-9 and 17 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. In claim 1, lines 8-10, the expression "wherein the shell layer forms only an exterior layer of the three-dimensional object and the interior layer forms only a layer within the three-dimensional object" (emphasis added) is not supported by the originally-filed specification and thus, constitutes new matter. In claim 1, line 19, the expression "wherein the interior layer forms a solid layer within the shell layer" (emphasis added) is not supported by the originally-filed specification and thus, constitutes new matter. In claim 5, lines 5-7, the expression "the shell layer forms only an exterior layer of the three-dimensional object and the interior layer forms only a layer within the three-dimensional object" (emphasis added) is not supported by the originally-filed specification and thus, constitutes new matter. In claim 5, lines 14-15, the expression "wherein the interior layer forms a solid layer within the shell layer" (emphasis added) is not supported by the originally-filed specification and thus,

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constitutes new matter. In claim 7, lines 5-7, the expression "the shell layer forms only an exterior layer of the three-dimensional object and the interior layer forms only a layer within the three-dimensional object" (emphasis added) is not supported by the originally-filed specification and thus, constitutes new matter. In claim 7, line 10, the expression "wherein the interior layer forms a solid layer within the shell layer" (emphasis added) is not supported by the originally-filed specification and thus, constitutes new matter.

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary.

Applicant is advised of the obligation under 37 CFR 1.56 to

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point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claims 1 and 3-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Findley et al (U.S. Patent Application Publication 2002/0175006 A1).

Findley et al (see the entire document, in particular, paragraphs [0068] - [0077]) teaches a solid freeform fabrication process for making a three-dimensional object as claimed. The aspects of complete layers, partial layers, interior layers and shell layers would have been obvious to one of ordinary skill in the art at the time the invention was made in the process of Findley et al principally because Findley et al teaches depositing material in one or more rings or shells to form each layer. The aspect of voxels (i.e., volume pixels, which are volume elements) would have been obvious to one of ordinary skill in the art at the time the invention was made in the process of Findley et al principally because a voxel, in the solid freeform fabrication art, is the smallest unit of volume that can be created by a given device, and a series of such volume elements defines a three-dimensional object (which is

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produced by solid freeform fabrication). Forming a solid (interior) layer would have been obvious to one of ordinary skill in the art at the time the invention was made in the process of Findley et al principally in order to provide desired properties (e.g., strength) to the final product.

8. Claims 3 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Findley et al (U.S. Patent Application Publication 2002/0175006 A1) as applied to claims 1 and 3-6 above, and further in view of Kerekes (U.S. Patent 6,492,651 B2).

Kerekes (see the entire document, in particular, col. 4, lines 9-16; col. 6, line 63 to col. 7, line 57) teaches a solid freeform fabrication process for making a three-dimensional object including determining layer height and using the information to modify criteria, and such would have been obvious to one of ordinary skill in the art at the time the invention was made in the process of Findley et al in view of Kerekes principally in order to actively monitor the height of any portion of a layer so as to dispense material at a desired location.

9. Claims 2, 7-9 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Findley et al (U.S. Patent Application

Publication 2002/0175006 A1) as applied to claims 1 and 3-6 above, and further in view of Fong (U.S. Patent 6,782,303 B1).

Fong (see the entire document, in particular, col. 3, lines 34-38; col. 8, lines 27-47; col. 10, line 30 to col. 11, line 35) teaches a solid freeform fabrication process for making a three-dimensional object including monitoring waste produced and using the information to modify criteria, and such would have been obvious to one of ordinary skill in the art at the time the invention was made in the process of Findley et al in view of Fong principally in order to monitor the amount of excess material deposited so as to adjust the deposition rate.

#### ***Response to Arguments***

10. Applicant's arguments with respect to claims 1-9 and 17 have been considered but are moot in view of the new ground(s) of rejection.

#### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leo B. Tentoni whose telephone number is (571) 272-1209. The examiner can normally be reached on Monday - Friday (6:30 A.M. - 3:00 P.M.).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christina A. Johnson



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can be reached on (571) 272-1176. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Leo B. Tentoni  
Primary Examiner  
Art Unit 1732

lbt